Cutoff Frequencies Of Circular Waveguide Loaded With Eccentricdielectric Cylinder

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Summary

The cutoff frequencies of a conducting circular waveguide loaded eccentrically by a cylinder are calculated. Analytical formulations are developed based on the boundary value method. The cutoff wavenumbers are then calculated as roots of the resulting characteristic determinant. Even and odd hybrid modes are considered and the cutoff frequencies calculated for both cases. Several examples for special cases are introduced for comparison followed by other general examples. The case of a dielectric-filled circular waveguide with an eccentric air core is also examined